The Impact of the Promoting Lifetime Activity for Youth Intervention Program on Children's Physical Activity, Body Mass Index, and Attraction to Physical Activity

Short Summary Copy

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Background

Promoting Lifetime Activity for Youth is an activity based program funded through the Preventative Health and Health Services Block Grant. Promoting Lifetime Activity for Youth is designed to increase moderate to vigorous physical activity (MVPA) in youth, Grades 4-8. This program was first implemented in 1996 by the Arizona Department of Health Services and County Health Departments. Since its inception, over 24,000 students have participated in the Promoting Lifetime Activity for Youth program each year. The goal of this program is to teach children active lifestyle habits and encourage them to accumulate 60 minutes of MVPA on a daily basis. Promoting Lifetime Activity for Youth requires a 15-minute activity break in the school day designed to teach youngsters a variety of physical activities. The program also requires self-monitoring by students to help them develop awareness about the amount of activity they accumulate each day.

In order to meet the Arizona Department of Education Comprehensive Health Education Standards, health behavioral changes are allied goals of the Promoting Lifetime Activity for Youth program. It places the responsibility for meeting physical activity recommendations on the students themselves, thus teaching them useful self-management skills at an early age. A basic tenet of the Promoting Lifetime Activity for Youth program is that each child is unique. Therefore, students are encouraged to participate in self-selected activities that meet their individual needs and interests.

Methods

Participants

A total of 35 schools participated in this study. All schools were located in the State of Arizona. Participants were 606 4^{th} grade students (315 girls, 291 boys) and their teachers. The mean age for boys and for girls was 9.8 years (SD = .6). The study was limited to fourth graders to ensure that each child had no previous exposure to the Promoting Lifetime Activity for Youth program. Informed consent letters were signed by all parents/guardians of the participants and each participant signed an informed assent form as recommended by the Institutional Review Board.

Instruments

Data was collected using three measures; pedometer step counts, body mass index (BMI) and an attitude inventory, the Children's Attraction to Physical Activity (CAPA). Physical activity levels of the students and their attraction to physical activity were assessed within four weeks after the conclusion of the intervention program. The height and weight of each student was also recorded during the week of physical activity data collection and used to calculate BMI.

Research Design and Intervention

A treatment-control post measurement design was used. Prior to the study each school was placed into one of four groups. The groups were based on the school's participation in the Promoting Lifetime Activity for Youth program and the existence of a PE program (defined as a program taught by a PE teacher). Because it is an intervention designed to promote physical

activity, Promoting Lifetime Activity for Youth was used as an independent variable. PE was also used as an independent variable because the impact of PE on physical activity levels, BMI, and attraction to physical activity could not be ignored. Schools were randomly selected for each group. The total number of schools throughout the state that had no PE program or did not participate in the Promoting Lifetime Activity for Youth program was limited, thus the number of schools in this group is lower. The follow table shows the number of schools/participants in each group, sex distribution within each group, and the name used to refer to that group.

Promoting Lifetime Activity for Youth & PE 10 Schools 185 students (91 girls, 94 boys)	**PE only** 10 Schools 178 students (93 girls, 85 boys)
Promoting Lifetime Activity for Youth only 9 Schools 150 students (75 girls, 75 boys)	**No Treatment** 6 Schools 93 students (56 girls, 37 boys)

Students in the Promoting Lifetime Activity for Youth & PE and Promoting Lifetime Activity for Youth only groups participated in the Promoting Lifetime Activity for Youth program. This was a 12-week intervention program implemented during the school day. The program was facilitated by classroom teachers who were trained by County Health Department coordinators. Coordinators gave teachers an outline of topics to discuss with their students. The Promoting Lifetime Activity for Youth program was implemented in three steps:

Step 1: Promote Promoting Lifetime Activity for Youth Behavior

This phase of the program was implemented over a one-week period. Teachers discussed the importance of physical activity and Promoting Lifetime Activity for Youth procedures with the class. Students and teachers participated in 15 minutes of activity each school day. This step was guided by the following: a) the teacher's role was to prompt students to move. Walking was the minimum level of activity expected, while standing and sitting were discouraged. b) Children chose a pace that was comfortable for them. "Pushing" children to a more rigorous pace was not required nor expected. c) The importance of physical activity was discussed as often as possible. Teachers were instructed to show they care (by being active if possible) about students being physically active.

Step 2: Introduce Teacher-Directed Activities

This portion of the program was implemented for three weeks. Students and teacher continued to participate in 15-minutes of activity each day. However, the teacher introduced a variety of games and activities. Teachers taught the same games on the same days. For example, on Day 1, "exercise tag" was taught. On Day 2, the game was "medic tag". A total of 15 activities were taught with teachers given teaching cards with an explanation of the game and teaching tips. The goal for this step was to expose students to a variety of games and activities that could be played outside of school with minimal equipment yet were feasible for non-specialist teachers to present.

Step 3: Encourage Self-Directed Activity

This final step was implemented for 8 weeks. It encouraged students to be self-directed in achieving 60 minutes or more of daily physical activity independent of the teacher. The types of activities available to students outside of the school setting were discussed by the class. During this 8-week period, students recorded their activity on their Promoting Lifetime Activity for Youth log sheet. Participants were encouraged to spend at least 60 minutes a day (outside of school) in activity, be active at least five days per week, and record their daily activity. At the beginning of each school day students were asked by the classroom teacher to record their previous day's activities. The goal of this step was to teach children to assume responsibility for developing regular physical activity habits.

Students in the No Treatment and PE only groups did not participate in the Promoting Lifetime Activity for Youth program. To assure all participants received similar attention and were required to monitor their behavior, these participants were asked to record "things I do after school" for 8-weeks. Participants were given a sheet similar to the groups involved in the Promoting Lifetime Activity for Youth program, with the only exception being all activities were recorded, including sedentary activities. Examples of such activities included watching TV, walking the dog, playing with friends, and reading. Teachers instructed students to record their previous day's activities each morning (similar to the Promoting Lifetime Activity for Youth students).

Results

Means and standard deviations for pedometer steps, BMI, and CAPA by group and sex can be found in the following table. Values for steps and CAPA are similar, although somewhat higher, to those reported in other studies of similar populations. Results showed boys higher than girls in steps and CAPA scores and lower in BMI values. Similarly, groups participating in Promoting Lifetime Activity for Youth (Promoting Lifetime Activity for Youth & PE and Promoting Lifetime Activity for Youth only) accumulated more steps and had lower BMI values. CAPA scores were similar for all groups.

Means and SD by Groups and Sex

	Steps/day		BMI		CAPA	
	M	**SD**	**M**	**SD**	**M**	**SD**
Promoting Lifetime Activity for Youth & PE						
Girls	12222	3665.1	18.64	4.03	2.96	0.57
Boys	13287	3937.0	19.12	4.27	3.04	0.52
All	12763	3832.7	18.89	1.15	3.00	0.55
Promoting Lifetime Activity for Youth only						
Girls	11429	3295.8	18.74	4.25	3.03	0.44
Boys	13758	4364.5	18.76	3.26	3.13	0.50
All	12598	4026.0	18.76	3.78	3.08	0.47
PE only						

Girls	11899	3562.3	19.59	4.31	2.98	0.47
Boys	12951	4223.4	19.10	4.64	3.04	0.46
All	12401	3919.5	19.35	4.47	3.01	0.46
			No Treatment			
Girls	9945	3416.2	20.35	5.51	3.00	0.48
Boys	13050	4756.0	19.30	4.02	3.03	0.48
All	11180	4261.9	19.92	4.96	3.01	0.48

A one-way analysis of variance (ANOVA) was conducted to evaluate the relationship between the groups and steps, BMI, and CAPA scores. The ANOVA was significant [F (2, 605) = 3.552, p = .14]. Tukey's post hoc test revealed significant differences among steps but not BMI and CAPA scores. Step differences were found between the **No Treatment and Promoting Lifetime Activity for Youth & PE** groups and between the **No Treatment and Promoting Lifetime Activity for Youth** only groups. When the groups were analyzed by sex, one-way ANOVAs showed significant differences for girls [F(3, 314) = 5.36, p<.001). Subsequent follow-up analysis using Tukey's post hoc tests indicated significant step mean differences for the **No Treatment and Promoting Lifetime Activity for Youth & PE** groups and for the **No Treatment and PE** groups. The following table shows the significant differences by groups for step counts.

Significant Differences for Step Counts between Groups

Group	Mean	SD	Mean Difference	Sig.
All Students				
Promoting Lifetime Activity for Youth & PE	12763	3833	1583	.010
No Treatment	11180	4262		
Promoting Lifetime Activity for Youth Only	12598	4026	1418	.035
No Treatment	11180	4262		
Girls				
Promoting Lifetime Activity for Youth & PE	12222	3665	2277	.001
No Treatment	9945	3416		

PE Only	11899	3562	1954	.006
No Treatment	9945	3416		

Discussion

Results indicated that the treatment was effective in increasing the physical activity level of children, especially girls. These findings have interesting implications, particularly with the recent emphasis on increasing the physical activity levels of girls. The **P.E & Promoting Lifetime Activity for Youth** and **PE only** groups were significantly higher in physical activity than the **No Treatment** group; even though not significant, girls in the **Promoting Lifetime Activity for Youth only** group demonstrated higher physical activity levels than girls in the **No Treatment** group. It is clear from this study that interventions, whether PE or Promoting Lifetime Activity for Youth, can be successful approaches for increasing the physical activity of girls.

No significant differences in steps were observed for boys across treatment groups. Examination of the descriptive statistics shows that boys in all groups are near or above 13,000 steps per day on average. Another study used similar methodology and found 10 year-old boys took an average of 12,546 steps per day, 500 steps less than the average of the **No Treatment** group in the current study. This suggests that the randomly selected boys in the current study were already highly active (or unknowingly motivated) prior to the intervention. The lives of elementary age school children are highly structured with little time for physical activity, particularly during school. Given the relatively high physical activity levels of boys, much of their discretionary time may already be spent in a physically active manner. Thus, there may not be enough time in a typical day to be more active.

BMI data showed no significant differences between groups. However, because of the short length of the intervention, it is difficult to use data from this study to draw conclusions regarding the effectiveness of Promoting Lifetime Activity for Youth in combating overweight and obesity. Although Promoting Lifetime Activity for Youth is consistent with a number of other intervention programs designed for obese children, most of the effective interventions for obese children are longer in duration. In order to examine the role of Promoting Lifetime Activity for Youth as an intervention to decrease the weight of children, a longer study over the course of a school year or school years, is necessary. It is important to note that Promoting Lifetime Activity for Youth is intended to be used throughout grades 4-8, thus carrying out the program as it was designed over a longer time frame might offer an effective approach. Again, only 4th grade students were used in the current study to ensure all participants had no previous exposure to the Promoting Lifetime Activity for Youth program.

Another variable reported to influence the physical activity patterns of children is attraction to physical activity. Attraction to physical activity, as measured by the CAPA, did not appear to be impacted by the Promoting Lifetime Activity for Youth program. However, the descriptive statistics indicate that children in the **No Treatment** group were attracted to physical activity as well. It is possible those participants were attracted to physical activity prior to participation in the study or that the instrument was insensitive to small changes. Using this assumption, finding an increased attraction towards physical activity for participants who already were positive about activity would be difficult. Personality traits such as attraction to physical

activity change slowly and a 12-week intervention program is not likely to impact CAPA scores significantly.

In conclusion, the findings from this study suggest that the Promoting Lifetime Activity for Youth intervention program has the potential to increase the physical activity levels of children, particularly girls. Programs such as Promoting Lifetime Activity for Youth, via increasing the activity levels of children and exposing children to the importance of physical activity, can have significant health implications for school-age children.